

Training and Certification - Indian Success Story

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Abstract

With the onset of globalisation and increased pace of industrialization, quality has become the watchword and password for success. Quality is achieved through judicious choice of NDE techniques. The advances in science and technology has resulted in a number of new NDE techniques and quantum improvements with respect to detection, visualization and quantification in the case of established techniques. Though automation has come to play a significant role, NDE techniques still rely heavily on human skill and knowledge for the correct assessment and interpretation of test results. Proper and adequate training and certification of NDT personnel is therefore a must to ensure that the capabilities of the techniques are fully exploited. This would ensure correct and precise interpretation and evaluation to be made. Thus training and certification of personnel forms an important aspect of non-destructive evaluation.

The Indian Society for Non-Destructive Testing is the prime body for NDT professionals in India. Training and certification in NDT is conducted by the National Certification Board (NCB) of ISNT. This Board is the only authorised body recognised by the Indian Standards Organisation - Bureau of Indian Standards for certification of NDT personnel. It has members carefully drawn from public, private sector organisations, third party inspection agencies, ministry, regulatory bodies, professional bodies, research and educational organisations. Since its inception in 1997, NCB has made significant progress towards harmonisation of training programs within the country. The NCB Quality manual has been prepared. Steps have also been taken for making Indian certification program comparable to internationally accepted programs such as ASNT and European standard to facilitate easy international harmonisation. More than 5000 personnel have been trained so far as Level – I, II and III during the past five years. This paper dwells on the role of NCB nationally and the importance of performance based qualification. It also dwells on the efforts for international harmonisation through international linkages.

Training and Certification in India - Historical Background

It is a well realized fact that in this era of global competitiveness, NDE is an essential prerequisite and password to Quality. Quality is achieved through judicious choice of NDE techniques. Non-destructive Testing or Evaluation

(NDT or NDE) gives an indirect assessment of integrity and fitness of materials/components/systems and involves to a very great extent human skill and knowledge for the correct assessment and interpretation of test results. Proper and adequate training of NDT personnel is therefore a must to ensure that the capabilities of the

techniques are fully exploited and correct interpretation/evaluations are made since they have a significant bearing on the quality and reliability of components/systems. It has become an accepted reality that training and certification form an important aspect of non-destructive evaluation. For training and certification of NDT personnel to be successful, it is imperative to have a system or methodology to objectively evaluate and certify the competence levels of NDT personnel.

In India, those who were working in the field of NDT even in the 50's and the 60's realized the importance and essentiality of training of NDT personnel.

In the 60's the Department of Atomic Energy and railways organized familiarisation talks and lectures on NDT arranged in different organizations and at various places. With the formation of a Professional Body on NDT – the NDT Society of Indian (ISNDT) in 1972, training programs became a part of the agenda of this Society. The society through its active branches in places like Mumbai and Kolkatta organized structured courses on specific NDT methods with practical demonstrations.

With the pace of industrialization and increased application of NDT, particularly in nuclear, defence, aerospace, petrochemical and heavy industries, Non Destructive Testing Society of India in the 80's constituted a panel of professionals for formulating a certification scheme. Comments on the draft scheme were invited from user departments around the country and the

refined certification scheme was adopted in 1982. This certification scheme followed the syllabus of SNT-TC-1A of ASNT. With this as foundation, ISNT started conducting Level-I and Level-II certification examinations in the conventional NDT methods at different ISNT chapter headquarters. In 1986, The Indian Institute of Non-Destructive Inspection Engineering arranged for the ASNT Level – III examinations in India in collaboration with ASNT.

Formulation of Indian Standard and formation of Certification Board

With the rapid increase in the adoption of several NDT methods and techniques in several industries and also due to the greater insistence on Quality by the customers, the need for recognition and harmonization of training and certification of NDT personnel was being felt all around. With

this in view, the Bureau of Indian standards (BIS) was requested in late 80's to take up the task of formulating an Indian Standard on this subject and in line with prevailing international standards. BIS promptly recognized the need and importance of ensuring the quality of trained and certified personnel and took up the issue in its MTD Sectional Committee (SMDC 21). ISNT took an active part in the deliberations and finally the Standard IS-13805 on Guidelines for training and certification of NDT personnel was printed and released in 1993. With the formulation of these guidelines, training and certification of NDT personnel was taken up by the chapters of ISNT more rigourously. This guidelines have since been revised and reprinted in 2004 and includes 10 NDT

methods and is inline with the requirements of the major international standards such as ISO 9712 and SNT-TC-1A.

Meanwhile Indian Society for NDT (ISNT) was recognized as National sponsoring Organisation in the late 1990s by the American Society for Non-destructive Testing (ASNT) for conducting ASNT-Level-III Examination. Starting from 1986, so far twenty ASNT level – III examinations have been conducted till date the latest exam being scheduled in December 2006.

While formulating the Indian standard on Training and certification of NDT personnel along with BIS, ISNT in parallel constituted the National Certification Committee in early 90's to start work on various procedures necessary to meet the requirements proposed in the draft standard. Later, to meet the requirements of IS-13805, the certification committee was renamed as National Certification Board (NCB) in 1997 and its objectives broadened. Keeping in view the objectives of NCB as stipulated in IS 13805 and its vital role in setting a high standard in all related activities of Training and Certification, the membership of NCB was carefully drawn from various public and private sector organizations, third party inspection agencies, regulatory bodies, professional bodies and research and educational institutions.

Activities of National Certification Board

During the last 10 years, NCB has met more than 30 times and has achieved significant progress in practically all

spheres of training and certification in the entire country. The major thrust during the initial years after NCB formation was harmonization of training and certification program in the country. India being a vast country with varied requirements, this was quite a challenging task. NCB started about its work in a systematic manner. A quality manual was first prepared which clearly outlined the scope and objectives of the training and certification schemes and provided

- a. Organisational structure for effectively conducting the training programs all over the country through appropriate zoning
- b. Guidelines for ISNT Level I& II examinations.
- c. Outlined the responsibilities of the training centres, examiners and Examination controllers
- d. Format of application forms for certification, recertification and certificates for ISNT Level I, II and III
- e. Guidelines for accreditation of NDT training centers and examination centers in different regions.

Apart from the above, NCB recognizing the role of performance based evaluation in NDE practicals, initiated steps for the procurement/collection of Test specimens with calibrated artificial/natural discontinuities for practical training as well as for examination purposes. It also initiated steps for the preparation of course notes in the conventional NDT methods and developed its own library of question

banks in various NDT methods. It has already published course notes in the areas of radiography, ultrasonics and eddy current testing and the other course books on magnetic particle, leak testing, acoustic emission and penetrant testing are expected to be released in the next one year. The uniqueness of these course books are its simplicity of language coupled with illustrations and down to earth explanations making it easy for the readers to grasp the fundamentals and also appreciate the strength, limitations and application areas of each method. ISNT-NCB has its own Level – III certification program and more than 100 candidates have been certified over the last five years. India is also one of the countries with a large number of ASNT Level – III certificate holders (more than 400).

Apart from its role as a certifying body, NCB through ISNT has active linkages with standardization bodies and regulatory authorities. NCB has been playing a effective role in the identification of areas that need new standards and also revision of old standards.

Role of NCB in International Harmonisation

Every developed and developing country has its own training and certification program. While some such programs (such as ASNT, PCN etc.) are well structured and established, many are in the nascent stage. However, a unanimous opinion that has been expressed by the developed and developing nations is the need for world harmonisation and international recognition of NDT personnel. It was during the ICNDT meeting at the 14th

World Conference on NDT at New Delhi, that a serious debate took place and a task group with Mr. Mike Farley (task leader) was setup. Since then, NCB through ISNT has been playing an active role in the international scenario. Dr. Baldev Raj played a key role in the formulation and adoption of the following resolutions during the ICNDT meeting at Copenhagen (held during 7th European Conference on NDT-1998)

1. ISO 9712 must be the basis for harmonisation
2. EN 473 should converge with ISO 9712 as soon as possible
3. Framework for Industrial Sectors/Practical exams is a high priority area for ISO TC 135 SC7
4. All national NDT Societies and their associated certification bodies should agree to pursue the above mentioned imperatives
5. National NDT societies and their associated certification bodies should support the introduction and use of accreditation of NDT personnel certifying bodies as this is a valued step towards international recognition.

Subsequently, members of NCB-ISNT have actively participated in the international harmonization of training and certification meeting both at Rome (15th WCNDT under the leadership of Shri Chandramouli) and Canada (16th WCNDT under the leadership of Shri Wagle) respectively. NCB-ISNT has also played a key role in the mutual recognition of training and certification within regions such as Asia Pacific initiated by the International Atomic Energy Agency. Dr. Baldev Raj was the Chairman of the Group which had its first meeting in Bangladesh in 2001. NCB-ISNT would also be participating

in the activities of Working Group – I on training and standardization of the PGPC.

is now Reliable NDE for Global safety through structured, harmonized and update personnel qualification and certification.

Summarizing

Thus in a relatively short span of less than 10 years the National Certification Board of ISNT had succeeded in harmonizing the training and certification scheme in a vast country like country – a matter it can be proud of. NCB-ISNT can also be proud of the fact that it has certified more than 7000 personnel in Level – I and Level II in the various methods and these personnel have performed very well in the strategic and core sectors not only in India but internationally as well. Through the systematic, structured approach of NCB guided by eminent internationally recognized NDE personnel and with the guidance of ISNT, India today has emerged as one of the few countries internationally with a well structured training and certification program that is on par with the international schemes.

Conclusions and Directions

The science and technology of nondestructive testing and evaluation is ever-expanding with newer and better methods/techniques. It is therefore needless to emphasize that training and certification activity would require continuous improvement and upgradation commensurate with industrial, national and global needs and should also keep pace with the state-of-the-art technology of NDE. NCB has recognized this and will always address itself to these issues. The motto of NCB

